restenosis rate (>50% DS) was 56%. 9 pts (33%) had a target lesion revascularisation.

Conclusion: RA with adjunctive LPBD provides safe and effective reduction of stenotic tissue in diffuse IR with excellent acute angiographic results. However, the angiographic rate of recurrent restenosis in these patients remains high.

1061 Strategies for In-Stent Restenosis

Monday, March 30, 1998, 3:00 p.m.–5:00 p.m.
Georgia World Congress Center, West Exhibit Hall Level
Presentation Hour: 3:00 p.m.–4:00 p.m.

MONDAY POSTER

1061-59 Rotational Atherectomy for Stent-Restenosis Results in Less Transient Perfusion Reduction Compared to Native Non-stented Coronary Arteries

J. vom Dahl, K.-C. Koch, E. Kleinhans, H.G. Klues, S. Ninnemann, G. Schulz, *Udalrich Buell, Peter Hanrath. University Hospital, RWTH Aachen, Germany*

Background: Rotational atherectomy (RA) frequently results in transient hypoperfusion due to peripheral obstruction by microcavitation, atheromatous debris, release of vasoactive substances, platelet aggregation, or vessel spasm. This study compares the incidence and severity of myocardial perfusion defects induced by RA in native coronary arteries with defects during RA for stent-restenosis.

Methods: 25 pts undergoing RA for restenosed stents (group A) were studied by serial Tc99m-sestamibi scintigraphy (SPECT) at rest before RA (preRA), during RA (tracer injection in the cath lab immediately after retrieval of the last burr in the guiding catheter; SPECT after 60 min), and 2 days after RA (postRA). The results were compared with 25 pts (group B), matched for age, gender, lesion localization and characteristics, with RA in non-stented type B and C coronary lesions. The RA technique (concomitant medication, stepped burr approach, short burr runs, burr/artery ratio ≥0.7, post RA dilatation) did not differ between both groups. For regional Tc-99m uptake analysis, myocardial perfusion was expressed as % of the Rg with maximal tracer uptake. The extent of hypoperfusion during RA was assessed as number of Rg/pt with uptake < 2SD of normal, and the severity was expressed as uptake during RA compared to preRA and postRA:

Group	Regions/pt	preRA (%)	RA (%)	postRA (%)
A	3.2 ± 2.9	77 ± 13	56 ± 14*	76 ± 16
B	3.1 ± 2.4	79 ± 17	61 ± 20*	80 ± 15

* p < 0.001 vs. preR and vs postR

Conclusions: The extent and severity of RA related transient hypoperfusion in restenosed stents is comparable to non-stented vessels despite the angiographic evidence of less "slow flow". Thus, the type of abraded tissue may be less important compared to other factors such as platelet activation.

1061-60 Directional Atherectomy for Treatment of Stent Restenosis – Feasibility and Histopathological Findings in 28 Patients

N. Cattelaens, U. Gerckens, R. Mueller, J. Gerlach, E. Grube. *Siegburg Hospital, Siegburg, Germany*

Debulking techniques demonstrated promising results the treatment of stent restenosis interventions compared with PTCA. Directional atherectomy (DCA) is suitable to extract a large ammount of tissue.

Methods: We performed DCA in 30 pts. with stent restenosis in 5 different stent-types using a 7 Fr. DCA-device (minimal diameter: 3.0 mm). Extracted tissue was examined histopathologically including staining for alpha-actin and vimetin to identify smooth muscle cells (SMC), siderin to detect stent material and Ki 67 to estimate the proliferation-index. Intervention was completed routinely by ballon dilatation and IVUS followed by off-line QCA. Follow-up included 48 hours and a phone call after 4 weeks.

Results: In 28 pts. extensive debulking was successfully performed exercising 12 ± 4 cuts. In 23 pts (82%) "stand-alone"- DCA provided a decent result (<20% residual stenosis). In 2 pts. the device could not be advanced to an angulated lesion despite predilatation. We recorded no serious complications (death, MI, CABG). In 3 pts final PTCA was not possible because of balloon rupture. In 19 pts (68%) stent material in the extracted specimen could be detected macroscopically. Siderin-staining was positive in 25 pts. (89%).

Histopathological findings demonstrated positive alpha-actin and vimetin staining documenting SMC with a high proliferation-index

Conclusion: DCA is a save and feasible method for interventional treatment of stent restenosis. Although stent material can usually be detected in the specimen, this does not affect the successful procedural outcome. Extracted tissue contains SMC with high proliferation index.

1061-61 Randomized Trial of ROtational Atherectomy vs Balloon Angioplasty for In-STEnt Restenosis (ROSTER)

S.K. Sharma, A. Kini, S. Duvvuri, F. D-Sterling, I. Lozano, G. Dangas, R. Vidhun, T. King, T. Cocke, J. Marmur. *Mt. Sinai Hospital, NY, USA*

In-stent restenosis (ISR) presents a difficult challenge due to high repeat restenosis rates (up to 70%) after balloon angioplasty (PTCA). Based on our preliminary experience with rotational atherectomy (RA) for ISR, a randomized trial comparing RA (followed by a balloon dilatation upto 4–6 atm) versus high pressure (12–16 atm) PTCA was started in 11/96. A total of 52 patients with ISR (defined as >50% diam. obst. >6 weeks post stenting) were randomized (26 RA, 26 PTCA).

Results: Baseline clinical and angiographic variables were not different in the two group. The time interval of ISR from initial stenting was 159 ± 62 days and mean lesion length of 13.9 ± 4.7 mm. In the RA group, mean burr size was 2.15 mm, mean burr numbers 2.2, mean burr-to-artery ratio of 0.7 and mean post dilatation balloon pressure 4.4 atm. In the PTCA group, mean balloon size was 3.4 mm (0.2 mm greater than the initial stent deployment) and mean inflation pressure 12 atm. IVUS data: *RA group* 74% of the luminal gain was due to plaque debulking by RA, 26% due to plaque compression by subsequent balloon dilatation, and stent expansion contributed none; *PTCA group* 62% of the luminal gain was due to plaque compression and 38% due to further stent expansion. There were no procedural complications and CK-MB release was 16% in the RA group and 12% in the PTCA group (p = NS). At the mean follow-up of 5 ± 3 months, there have been no Q-wave MI or death; one patient in the PTCA group underwent CABG. Clinical restenosis was defined as angiographic restenosis, target vessel revascularization or recurrent angina Class III–IV.

Variables	RA (n = 26)	PTCA (n = 26)	p
Ref. Vessel Diam. (mm)	3.1 ± 0.4	3.2 ± 0.4	NS
MLD Pre (mm)	0.9 ± 0.4	0.9 ± 0.4	NS
MLD Post (mm)	2.8 ± 0.4	2.5 ± 0.4	0.04
Dissection/Stent use (%)	2 (8)	13 (50)	< 0.01
Clinical Restenosis (%)	1 (4)	7 (27)	0.03

Conclusions: In the ROSTER trial for in-stent restenosis, rotational atherectomy resulted in better angiographic luminal gain, lower incidence of dissection and stent use, and lower clinical restenosis compared with PTCA. Thus rotational atherectomy should be preferred over PTCA for interventional treatment of in-stent restenosis.

1061-62 Does Lesion Length Affect Late Outcome of Patients With In-stent Restenosis? Results of the Multicenter Laser Angioplasty for Stent Restenosis (LARS) Registry

R. Mehran, S. Ito, A. Abizaid, A.S. Abizaid, A.J. Lansky, J.J. Popma, A.D. Pichard, L.F. Satler, K.M. Kent, M.B. Leon. *Washington Hospital Center, Washington, DC, USA*

Although diffuse in-stent restenosis (length >10 mm) is associated with a high late clinical recurrence after repeat angioplasty, the precise contribution of restenosis length to late outcome is not known. To address this issue, we reviewed the late outcome of 157 patients (163 lesions) treated for in-stent restenosis in a multicenter registry using either PTCA (n = 65) or Eximer laser angioplasty (n = 92). Lesions were grouped according to lesion length (table). Baseline clinical characteristics were similar.

	< 10 mm (n = 52)	10–20 mm (n = 62)	>20 mm (n = 34)
Reference (mm)	2.92 ± 0.64	2.77 ± 0.62	2.75 ± 0.60
Pre MLD (mm)	1.26 ± 0.68	1.02 ± 0.52	0.78 ± 0.38*
Pre %DS	56 ± 16	63 ± 15	71 ± 13*
Final MLD (mm)	2.17 ± 0.68	2.20 ± 0.59	2.08 ± 0.59
Final %LS	22 ± 15	25 ± 13	26 ± 13
Any TLR	33.9	25.5	40
Repeat PTCA	14.5	19.4	38.1*

* = p (ANOVA) < 0.05; TLR = target lesion revascularization

We conclude that patients with in-stent restenosis of the longer lesion have a higher rate of repeat PTCA for second restenosis after percutaneous therapy. Diffuse (>20 mm) restenosis may warrant more aggressive debulking or adjunctive therapy (pharmacology or radiation).